intracellular IL-17A. Infected animals also developed peribronchial B220⁺ cellular foci.

In mediastinal LNs following infection, PA-specific responses were dominated by B220⁺ CD19⁺ CD43⁺ CD23⁺ B5⁺ cells expressing and producing IL-17A and IL-22 as well as PA-specific IgM but not IgG. This PA-specific B1 response was not seen in the thoracic lymph nodes of sterile-bead treated animals. In splenocytes, there was a pre-existing B cell response to PA with identical features. Peritoneal B1a cells isolated from untreated controls also produced IL-17A, IL-22 and anti-PA IgM following infection, confirming the existence of pre-existing B1 cells that can respond to PA. In MT animals, chronic colonisation rates, bacterial burden and neutrophilic inflammation did not differ from WT littermates. However, classical PA-specific Th17 responses dominated following infection in MT animals, suggesting alternative compensatory IL-17 sources acting in the absence of B cells.

Conclusions In chronic pulmonary PA infection, innate-like B1 cells migrate to the site of infection and are a novel source of pro-inflammatory IL-17 cytokines.

Lung cancer: reasons to be cheerful

S106 "REASONS TO BE CHEERFUL"—DATA FROM YEAR 8 OF THE NATIONAL LUNG CANCER AUDIT

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10.1136/thoraxjnl-2013-204457.113

Introduction The National Lung Cancer Audit, now in its 8th year, is run jointly by the Royal College of Physicians and The Information Centre for health and social care, and is commissioned by the Healthcare Quality Improvement Partnership (HQIP). Over this period, the audit has collected rich data of increasing quality and has charted improving standards of care for patients, as well as persistent variation across organisations which in most cases is independent of case-mix.

Methods Although several other countries also submit data to the audit, this abstract presents provisional results for England only for patients first seen in 2012.

Results 31,003 patient records were submitted with the improvement in recording of stage being the most noteworthy change in data quality. Full details are given in Table 1. Spirometry data is available for 63% of Stage I-II/PS 0–1 NSCLC patients. The histological confirmation rate has risen slightly after a dip in the previous year, and the proportion of patients with non-subtyped NSCLC continues to fall. There have been small but incremental rises in the anti-cancer treatment rate, the resection rate in histologically-confirmed NSCLC, and the proportions of patients having the input of specialist nurses and having the nurse present at the time of diagnosis. Increases are also noted in the proportion having CT scan before bronchoscopy (90%) and having chemotherapy for locally advanced NSCLC with good PS (57%).

Variation in practice still exists—for example, the resection rate in Stage I-II NSCLC varies from 35% to 62% across the cancer networks.

Our final presentation will contain further analyses of survival across the audit lifespan.

Conclusions The lung cancer community should be very proud of the quality of data that they provide to the audit, data which

provides clear evidence of gradually improving standards of care. Demonstrating that these improved diagnostic pathways and increased treatment rates translate into longer survival has so far proven elusive since short-term survival is heavily influenced by the large numbers of patients presenting with advanced incurable disease, but as the data matures it is hoped that longer-term survival will indeed increase.

Abstract S106 Table 1.

	2005	2006	2007	2008	2009	2010	2011	2012
Data Completeness								
Number of cases	10,920	16,922	20,639	25,757	30,158	30,329	31,429	31,003
PS	66%	77%	80%	87%	88%	84%	89%	91%
Staging	51%	55%	70%	77%	80%	82%	84%	94%
Treatment	66%	72%	79%	82%	89%	89%	91%	91%
Process and Outcomes								
HCR	68%	66%	65%	66.7%	69.5%	76.5%	73.8%	75.5%
NSCLC NOS rate	-	36%	32%	33.6%	30%	24%	19%	16%
Discussed at MDT?	79%	84.3%	86.8%	88.6%	93.2%	96.1%	95.9%	95.6%
Anti-cancer treatment?	45%	50%	52%	54%	58.9%	58.5%	60.5%	61.0%
Overall resection rate	9%	9.4%	10.3%	11.2%	13.9%	13.9%	15.3%	15.5%
NSCLC resection rate	13.8%	14.3%	15.2%	16%	19%	18.3%	21%	22%
SCLC chemotherapy rate	57.7%	61.7%	64.5%	63%	66%	65%	68%	68%
Seen by LCNS	-	-	-	50.9%	64.4%	75.5%	79.4%	81.9%
LCNS at diagnosis	-	-	-	28.5%	41%	51.9%	58.7%	61.2%

HCR = histo-cytological confirmation rate; LCNS = lung cancer specialist nurse; NOS = not otherwise specified

S107 TREATMENT AND OUTCOMES FOR LOCALLY ADVANCED (STAGE IIIA) LUNG CANCER; 4 YEAR EXPERIENCE FROM THE NATIONAL LUNG CANCER AUDIT

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10.1136/thoraxjnl-2013-204457.114

Background Surgery for lung cancer patients with mediastinal lymph node involvement (N2 disease) remains controversial. In one study (Albain 2009), progression-free (but not overall) survival was higher for patients who received induction chemoradiotherapy followed by lobectomy but post operative mortality was high in pneumonectomy patients. We describe treatment and outcomes for patients with pre-treatment IIIA disease using data submitted from England to the National Lung Cancer Audit (NLCA) 2008–2011.

Methods Patients with pre-treatment staging of T1–3, N2, M0 were included. Small cell cancer, mesothelioma and carcinoid were excluded. The extent and histological nature of pre-treatment N2 disease is not recorded in the NLCA. Survival analyses were performed according to treatment received.

Results 6,775 of 98,403 (6.9%) patients met the inclusion criteria. 2,669 (39%) patients had either chemotherapy or radiotherapy recorded and 2,250 (33%) patients had no treatment recorded. 948 (14%) patients received chemotherapy and radiotherapy however radiotherapy treatment intent was recorded as curative in only 12%. 907 (13%) patients had surgery recorded as part of their treatment plan. Of these, 70% had post operative pathological nodal status recorded (25% N0, 14% N1, 30% N2). Median survival following surgery for the 271

patients with pathological N2 disease was 806 days, with 30 day survival of 99% and 1 year survival 76%.

Conclusions Lung cancer patients with stage IIIA disease make up a very small proportion of the overall lung cancer population. Only a small proportion of these patients receive surgery and there is significant discrepancy between the recorded pre and post operative nodal status. In patients with pathological confirmed N2 disease survival is similar to the 713 days reported in the Albain study. The automated collection of detailed radiotherapy/chemotherapy treatment data in future will allow a more reliable comparison between surgical and non-surgical treatments.

S108 STATIN USE AND CIGARETTE SMOKING ARE ASSOCIATED WITH LOWER INCIDENCE OF RADIATION PNEUMONITIS

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10.1136/thoraxjnl-2013-204457.115

Background Three months after radical radiotherapy for lung cancer, 50–60% of patients have radiation pneumonitis (RP) on CT thorax. Our aim was to assess the clinical and dosimetric factors associated with radiologically-defined RP. Our primary endpoint was the development of new infiltrates on CT thorax at 3 months following radiotherapy.

Methods 161 patients with lung cancer were referred for radical radiotherapy during 2009–2010. Exclusion criteria were previous thoracic radiotherapy or surgery, palliative radiotherapy, or missing dosimetric or CT data.

Information on medical history, lung function and date of death were taken retrospectively from electronic notes. Dosimetric parameters V20-Lung (percentage normal lung exposed to more than 20Gy), V5-Lung and Mean Lung Dose were derived from treatment planning dose-volume histograms. Development of RP was defined as an increase in the percentage lung volume occupied by consolidation or ground glass on post-radiotherapy CT. Student's t-test and Fisher's Exact Test were used to define variables which were associated with RP prior to logistic regression analysis.

Results 98 cases were included in analysis. 86% had non-small cell lung cancer, 44% had chronic obstructive pulmonary disease (COPD), and 27% smoked. 49/98 (50%) patients developed RP on CT at median 90 days post-radiotherapy.

The factors which had a significant positive correlation with RP on univariate analysis were V20-lung, V5-lung and MLD: these were best represented using V20-Lung $\geq 22\%$. Current smoking, poor performance status and having COPD had a significant inverse correlation with RP. Use of statins or inhaled Long Acting β_2 Agonists, and the presence of moderate-severe radiological emphysema also approached significance: these were included in regression analysis.

After logistic regression, the factors which had a significant correlation with RP were V20 $\geq 22\%$ (OR 6.45, 95%CI 2.22–18.08), current smoking (OR 0.23, 95%CI 0.07–0.79), and statin use (OR 0.30, 95%CI 0.102–0.863).

Neither RP nor any other variable was associated with post-radiotherapy mortality.

Conclusions This study confirms that V20 $\geq 22\%$ is associated with the radiological development of RP. In addition, patients

who smoked, and those taking statins were significantly less likely to develop RP. A potential role for statins in modifying radiotherapy side effects deserves further attention.

S109 THE INTRODUCTION OF STEREOTACTIC ABLATIVE RADIOTHERAPY INCREASES OVERALL RADICAL TREATMENT RATES FOR STAGE I LUNG CANCER BUT DOES NOT REDUCE SURGICAL RESECTION RATES—A TWO CENTRE STUDY

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10.1136/thoraxjnl-2013-204457.116

Background Stereotactic ablative radiotherapy (SABR) is a new treatment option for peripheral stage I lung cancer in patients unfit for surgical resection. SABR was introduced to Leeds Teaching Hospitals (LTHT) and Mid Yorkshire Hospitals (MYH) in May 2009. We sought to establish what effect the introduction of SABR had on surgical resection rates for stage I lung cancer, and compared clinical characteristics of patients receiving surgery, SABR, conventional radical radiotherapy (RRT) and best supportive care.

Methods All patients diagnosed with stage I lung cancer from 2008 to 2011 were analysed for treatment modality, performance status (PS) and lung function.

Results 565 stage I patients were studied and treatment rates over the 4 year period are shown below. The proportion of patients receiving SABR rates rose from 0% in 2008 to 26.1% in 2011. Surgical resection rates remained largely unchanged, but there was a reduction in the proportion of patients receiving best supportive care from 32.6% in 2008 to 13.7% in 2011. Overall radical treatment rates for the four years were 60%, 70.7%, 68% and 85% for 2008–2011 respectively.

The proportion of patients with PS 0–1 were as follows: surgery 88%, SABR 39%, RRT 38% and BSC 13%. FEV₁(l) (mean $\pm$ predicted, 95% CI) was significantly higher in patients receiving surgery (80.1, 77.3–82.9) compared to those patients receiving SABR (62.1, 56.0–68.3, $p < 0.001$ vs surgery), RRT (62.7, 54.2–71.3, $p < 0.001$ vs surgery) and BSC (56.4, 49.8–63.0, $p < 0.001$ vs surgery). Similarly gas transfer was significantly higher in the surgical patients compared to the other three groups.

For stage I lung cancer patients over the age of 75, the proportion of patients SABR rose from 0% in 2008 to 32.1% in 2011. Overall numbers of patients aged over 75 receiving BSC decreased over the four years; 49%, 45.5%, 38.6% and 24.4% for 2008–2011 respectively.

Conclusion The introduction of SABR has led to a significant increase in overall radical treatment rates for patients with stage I lung cancer, without resulting in a sustained reduction in surgical resection rates. Patients undergoing SABR and RRT have worse lung function and performance status than those undergoing surgery.

S110 EXPERIENCE WITH SUSPECTED CANCER REFERRALS FROM THE UK LUNG SCREEN TRIAL

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10.1136/thoraxjnl-2013-204457.117